

# DIGITAL TV TRANSITION SURVIVAL GUIDE



This is the **biggest change** to standard TV signals since color TVs were introduced over **50 years ago**. What does this mean for you and other TV owners?

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## Overview

### Feb. 17th – Turn On, Tune In, What Happened?

On February 17, 2009\* analog TV signals from television transmitters will be turned off and only digital TV signals will be broadcast over the air. Many consumers will be affected and many won't. If you are not sure you will be affected, take this 30 second test and find out.

\* It looks likely that the transition will be delayed to give TV owners more time to prepare and more coupons to be sent out. June 12, 2009 looks like the revised date.



### Retrevo 30 Second DTV Readiness Test

#### 1 Is your TV hooked up to a cable or satellite connection?

Yes: You're good to go however, these providers are not obligated to continue providing analog signals and at some point in the future you may need to replace your old set.

#### 2 Is your TV hooked up to rabbit ears (indoor) or rooftop (outdoor) antenna?

Yes: If your TV set is more than a few years old chances are it is an analog set and you will need to buy a converter box or replace the TV. If you don't know if your set is analog or digital look in the [manual](#) or on the back of the TV for the letters "ATSC" which means it has a digital tuner and you are good to go.

### What You Need to Know

In this survival guide the experts at Retrevo will tell you what you need to know about using your current TV or, just in case you want to use this event as an excuse to bring your TV or Grandma's TV up to 21st century standards, Retrevo has recommendations for the best values in TV sets.

Digital signal represents "bits" of data that are either on or off. Analog signals have many possible levels. Digital signals typically either work or don't work while weak analog signals can still deliver a picture even though it might be snowy or have a ghost image.

#### Digital Signal



#### Analog Signal



## It's All in the Tuner

NTSC tuners take analog signals from an antenna, cable, or other connections and turn them into something you can see and hear on your TV set. To receive programming over the air (OTA), NTSC or analog tuners are usually connected to external rabbit ears or rooftop antennas. Many TV sets hooked up to a basic cable connection also use an analog TV tuner to display all the non-premium channels but these won't be affected in February.

On February 17, 2009 analog signals will not be available over the air and all tuners getting signals over the air will need to be ATSC tuners which accept digital signals. TVs can receive digital signals over the air, often using the same external antennas but they'll need to have an ATSC digital tuner in order to hear or see anything. Cable-based systems should not be affected since cable companies should continue to offer analog signals for most basic cable channels. Satellite systems already transmit digital signals and should not be affected either by the switch over.



If you happen to have a TV or device with an analog tuner you have two choices. You can buy a converter box and possibly use a government issued coupon to get a discount or you can replace the old analog-based TV with a brand new digital one.

## VHF and UHF

Digital TV signals are currently and will be after February 17th transmitted over VHF and UHF bands. Many stations currently transmitting analog signals over VHF will be transmitting their digital signals on UHF. If you signal is strong enough you should be able to get by with a general purpose antenna but if you're on the fringe you may have to get a new antenna tuned to receive digital signals over VHF and UHF.

## Converter Boxes

A converter box will most likely be the cheapest solution especially if you use a \$40 coupon for a \$60 converter box however it could make for a few problems. For starters, you'll have another remote to deal with. If you're lucky, your universal remote will work with your old TV and the converter box but Grandma will have to figure out how to switch devices on the remote to raise the volume. You'll also have something else to plug into an outlet and fit on the shelf. Some estimates claim there are 30 million analog sets that will require converter boxes or will need to be replaced.



## Government Coupons

The federal government is offering \$40 coupons\* that consumers can use on a basic converter box. You can request up to two coupons per household now through March 31, 2009. Remember the coupons are only good for 90 days so make sure there is something available to purchase before requesting a coupon. DVRs or DVD Recorders come with digital tuners and are reasonably priced, but are not eligible for the government coupons.

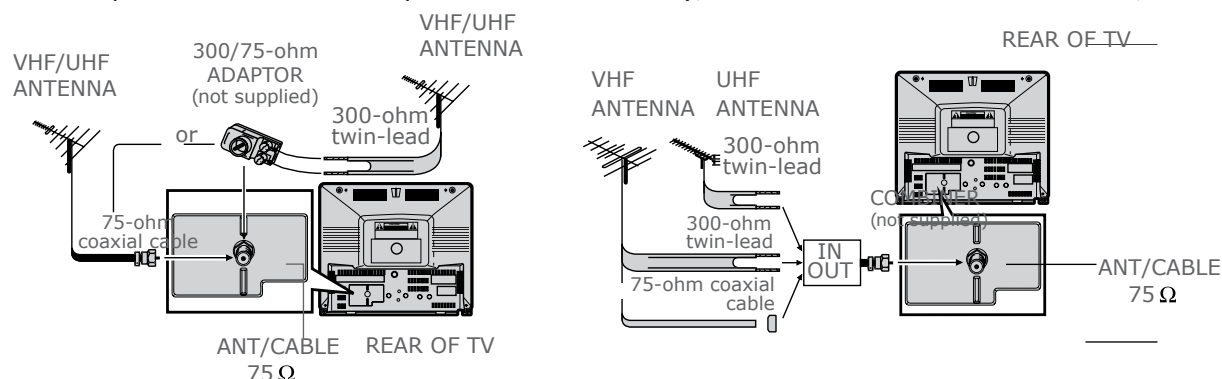
\*It has been reported that the government has temporarily run out of coupons. Check back with Retrevo for more news on this development. We suspect that funds will be made available soon to allow the government to issue more coupons without having to wait for unused coupons to expire.

## Hooking Up a Converter Box

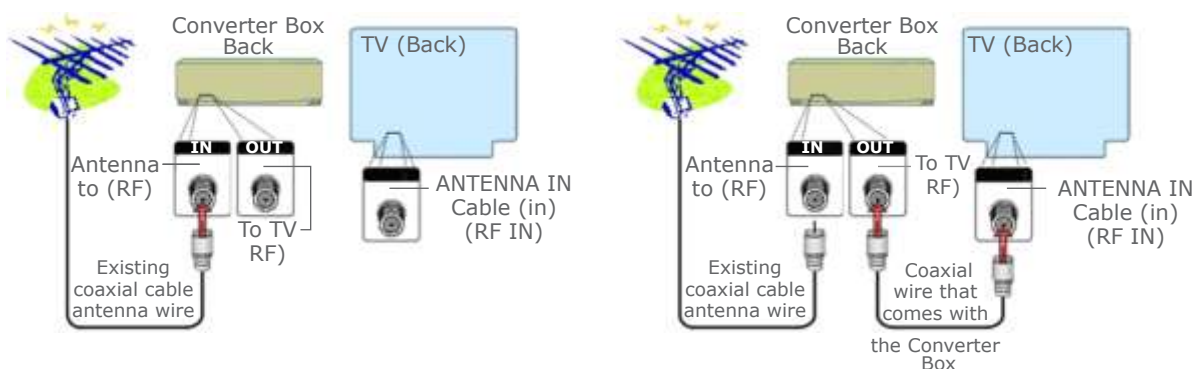
If you are currently getting your TV signal over-the-air from an indoor antenna like a pair of rabbit ears, or an external antenna like a rooftop antenna then all you need to do is “insert” the converter box in between the antenna and the TV.

Most likely your connection looks something like this represented in a Sharp TV Manual.

Connect the antenna to the “Antenna In (RF)” on your converter box and using the supplied cable (if not supplied you can buy a short coax cable at your local Radio Shack), connect one end to the “Out to TV,” connector on the



converter box and the other end to the antenna port on your TV. As shown in the government document below. You'll find more diagrams from the government on hooking up your converter box [here](#).



The next step after you turn the converter box and TV on is to set the TV to channel three. You should then see a menu from the converter box. You'll probably have to “scan” the stations so the converter box knows what channels are working. You should then be able to use the on screen guide and any other tools like a signal strength meter to get the best picture.

## DTV Converter Box Buying Guide

DTV converter boxes often referred to as CECBs (coupon-eligible converter boxes) are fairly simple devices that take in a digital signal and output an analog signal. Reviewers have singled out some boxes over others. For example the Zenith DTT900 or 901 Insignia NS-DXA1 are two converter boxes with most of the important features.

## Features to Look For

### Program Guide

Digital TV offers a nice addition over the old analog signal; you now can get a program guide similar to what you get with cable or satellite service. Most boxes use [PSIP](#) (Program and System Information Protocol) however, some boxes provide more information than others. The Microgem MG2000, Channel Master CM-7000, and the Artec T3A Pro are three converters that have "Better" guides according to Consumer Reports.



### Universal Remote

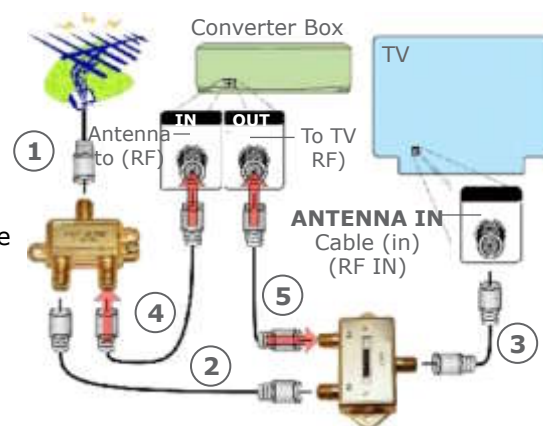
A converted box will require you to change channels on the box while the volume may still be controlled on the TV (many boxes let you change the volume on the box itself). This means that a universal remote that can control both the box and the TV will be more convenient. The Insignia NS-DXA1, Zenith DTT901, and the RCA DTA800B come with Universal Remotes.

### Analog Pass Through

This should only affect TV owners in areas with low-power TV stations that will not be required to switch to digital. Low-power stations are more common in rural areas. The Philco TB100HH9, Magnovox TB100MG9, Insignia NS-DXA1, and Zenith DTT901 all offer analog pass through. On the other hand, it's not hard to create an analog pass through on your own using an [inexpensive splitter](#).

### VCR Timer

If you have an old VCR and you record different programs on different stations at different times then you'll want to buy one of the few converter boxes that can change stations at programmed times. Otherwise you could always upgrade to a new DVD recorder. The Dish Network DTVPal and Zinwell ZAT-970A have this feature.





## Recommended Converter Boxes

There are well over a hundred converter boxes to choose from (probably all manufactured by handful of companies). These are fairly simple devices so there should not be a lot of difference among them and reports from publications like Consumer Reports bears that out. However reviews and forums indicate a few standouts. Here's the list:



[Zenith DTT901](#) and the identical [Insignia NS-DXA1-APT](#) get high marks from users and reviewers. The Zenith sells at Circuit City, Kmart, and Radio Shack and costs around \$50. The Insignia can be found at Best Buy for \$59. Both units have analog pass-through for those in areas (mostly rural) served by low power stations that are not required to switch to digital



The three top rated converter boxes on Consumer Reports are currently the [Alpha Digital AT2016](#) (\$55), [Tivax STB-T9](#) (\$50) and the [Lasonic LTA-260](#) (\$60) They claim they all offered superior picture quality but they also lack some features like analog pass-through and universal remotes.



The [Channel Master CM-7000](#) gets high marks for picture quality. It's one of the few boxes that have an S-video output but doesn't offer analog pass-through. It costs around \$80.



The [Zinwell ZAT-970A](#) is getting good marks from users who like the fact that it can be programmed to turn on and off and change channels for consumers using old analog VCRs to record different channels. It can be found online at sites like [www.solidsignal.com](http://www.solidsignal.com) and [www.watchdigitaltv.com](http://www.watchdigitaltv.com) for around \$50.



The [RCA DTA800](#) gets high marks for its remote with big buttons and good video quality. It is compatible with the new Smart Antennas. You can buy this converter at Walmart stores for around \$60.



The [Dish Network TR-40 CRA](#) gets praised for its electronic programming guide (EPG) which displays several days of programming. You can use the programming timer to turn the box on and off and change channels so you can use it with your old VCR.



## HDTV Buying Guide

If you have been looking for an excuse to replace your old analog and move up to digital TV or all the way to HDTV or need a good argument for your spouse or significant other to justify buying a new TV this could be the perfect time. Selecting a new HDTV can be a difficult task. Here's a brief summary of some things to consider. For more detailed advice go to [Retrevo.com](http://Retrevo.com).

### Digital TV vs. High Definition TV

First let's just make sure you know that digital TV is not exactly the same as HDTV. HDTV is a high resolution version of standard definition digital TV. You can be watching a program over the new digital TV broadcast system and not be watching HDTV either because the broadcast is not in high definition or your TV does not support high definition. Most new digital TVs now support at least the lower level of HDTV (720p or 1080i) while reasonably priced "Full HD" TVs are very common. We recommend getting at least a 720p or 1080i capable set and if you want to future-proof your TV purchase, get a 1080p capable set.

The prices on HDTV products have been dropping and there are some very good values in LCD TVs and Plasma TVs in all sizes. The first thing you'll need to do is decide between an LCD TV, Plasma TV, Rear Projection, or possible an HD Front Projector.



### HDTV Types

In a nutshell, LCD TVs generally offer the best value in sizes below 50 inches. Plasma's have generally been regarded as having deeper blacks, warmer colors, and better resistance to blurring of fast action sequences. Rear projection TVs have compromised viewing angle and image quality in return for offering low prices for very large sets. Mitsubishi's laser-based DLP rear projection TV may change all that but will command a much higher price. Front projection systems offer pictures that fill an entire wall for a few thousand dollars and are often mounted on ceilings.



### Screen Size

After you've selected the type of TV you want the next thing to consider is size. Although there are rule of thumb guides like the optimal viewing distance is 1.5 – 2 times the diagonal size (42" TV = 6 – 7 feet), we recommend getting the largest size TV that goes with your furnishings. You'll probably end up with a 32" – 37" TV for the bedroom, and anything from 42" to 70" for the living room. Smaller flat panel TVs are available for the kitchen and even smaller digital TVs for the boat, RV, or other portable application.

**\*Tip** When sizing a TV, keep in mind that many programs will be "resized" for your TV with black borders framing a smaller picture. This is a good reason to get a larger TV than you might be considering.

## Save the Planet With a Green TV

Bruce Berkoff, Chairman of the [LCD TV Association](#) has written an excellent HDTV buying guide that you can purchase for \$7.95 [here](#). Bruce talks about "Green" considerations when buying a TV:



"Starting in the later part of 2008, many sets will be rated under the EPA's "ENERGY STAR" program. Remember, with the prices of electricity going up, saving energy will not only be good for the earth but also will save you money. So look at average power usage (as well as low standby power modes when the TV is off, and other neat energy saving features like an ambient light sensor to automatically lower the average brightness when you turn the lights down). Over time, TV set vendors will learn to use smaller boxes to save on waste (landfills!) and shipping costs (as more boxes will fit on one truck) and also sets will meet higher standards for recycling and environmental safety with less heavy metals in the glass and electronics, so look for these features in the future when you can as well. (LED backlights may also help here, too)."

For more buying guides and help with finding the right TV for you try Retrevo's [HDTV Product Advisor](#), [Buying Guides](#), and [HDTV Deals](#).

## Best HDTV Sets to Replace Your Old Analog TV

HDTV sets come in a wide variety of sizes and prices. Here's a list of suggestions to replace your TV or grandmas old analog TV with something flatter, more energy efficient and better looking.

### Replace that small TV in the bedroom, kitchen, or next to grandma's rocking chair

We'd recommend something in the 22 inch to as large as 42 inch depending on how big your bedroom is. Remember it is hard to tell the difference between 1080p and 720p on a set smaller than 37 inches so don't turn down a good deal on a 720p TV however, 1080p sets are pretty reasonably priced.



#### **Westinghouse SK-19H210S TV**

You can buy this 1080p 19 inch LCD TV for under \$300. You get one HDMI port but you can just as easily hook up a pair of rabbit ears and watch digital TV.



#### **Samsung LN-26A330 TV**

The 26 inch, Samsung LN-26A330 is a 720p LCD TV that gets good marks from users for picture quality and sleek piano black design. This TV would go well in a large kitchen or small bedroom. It sells for around \$500



#### **Sony BRAVIA KDL-26M4000TV**

The 26 inch, Sony BRAVIA KDL-26M3000TV is another 720p set that costs a little over \$500 It gets good reviews for picture and sound quality.



#### **Vizio VW32L TV**

The 32 inch, This Vizio 32" TV is a 720p LCD TV with 2 HDMI ports, and costs around \$450. It gets good marks for picture quality and value.



#### **Sharp LC37D64U**

A 37 inch TV is about the size where you might start to notice a difference between 1080p and 720p. This 37 inch 1080p LCD TV sells for just under \$900.

### Replace that old RCA wood cabinet in the living room

For the living room we recommend something in the 42 inch to 50 inch for most average sized rooms. You can also go big with a very reasonably priced rear projection TV or very expensive large screen Plasma TV.



#### **LG 42PG25 TV** – LG42G70

The 42 inch LG 42PG25 is a 720p set for under \$1000. It's a good value and should be perfectly fine for grandma's living room or even your back bedroom. It gets high marks for looks and picture quality.



#### **Sony BRAVIA KDL-46XBR4**

This XBR4 series, 46 inch LCD TV is a popular and highly rated 1080p HDTV set. It offers 120 Hz refresh for improved presentation of movies and reduction of blurring of fast action scenes. It's a little on the pricey side, selling for around \$1,700.



#### **Samsung LN-T4665F**

Samsung LN46A650 is a 46 inch, 1080p LCD TV that has 120 Hz refresh and 4 HDMI ports. You can buy it for around \$2200



#### **Panasonic TH-50PZ750U**

Plasma TVs become very competitive at sizes of 50 inches and more. This Panasonic 50 inch 1080p Plasma costs around \$2000. It gets very high marks for deep blacks and rich colors.



#### **Mitsubishi WD-7373673**

You can get this 73 inch monster RPTV (rear projection) for around \$2400. The 1080p DLP set, gets high marks for good value. At 96 lbs. it's actually lighter than the 50 inch Pioneer Plasma.

### **Replace that old portable TV you take on vacations**



#### **Haier HLT71**

The Haier 7-Inch portable LCD TV has an ATSC tuner so it will receive the new digital signals coming this February. The rechargeable battery is rated at 2.5 hours. This portable TV weighs just under 3 lbs, is a bestseller on amazon.com and will cost you a little over \$100.

## Geek Speak Guide

So you're shopping for a [Blu-ray DVD](#) player at your local electronics store and the sales associate starts speaking terms like "progressive scan, profile 2 and upconversion". You know they're speaking English but have no clue what they are talking about. What do you do?

With technology changing so fast and new consumer electronics products seeming to hit stores daily it's very confusing and hard to keep up. Adding to the consumer confusion are the product brands who use their own unique terms (some call this "marketing-speak") to try and differentiate their products from competitors.

We're putting the consumer back into consumer electronics by describing those terms in a simple language anyone can understand. Here's the first installment of GeekSpeak - for [HDTVs](#), and [DVD Players](#). Bring it with you on your next shopping trip and and shop like a pro for your Home Entertainment needs!

## Geek Speak

Retrevo's Guide to Speaking Consumer Electronics



### HDTV Geek Speak



#### Feature

Plasma or LCD

Screen size rule of thumb

Refresh Rate

Inputs/Outputs

1080i vs 1080p

#### Definition

Both great; if buying 50" and up, go Plasma – anything below 47" go LCD

1.5 to 2 times the diagonal size for optimal viewing distance; 42" TV = 6 – 7'

How fast your TV displays images; 60Hz is standard 120Hz = less blurring

Inputs determine video quality; the picture is only as good as the signal

i (interlaced) scans half the lines at a time and p (progressive) scans all lines at once for a smoother picture

### DVD Players Geek Speak



#### Feature

Progressive Scan (PS)

Blu-ray

Inputs/Outputs

Dolby v. DTS

Up Conversion

#### Definition

Scan lines are less visible but your TV has to support it

Latest standard for storing High Definition (HD) content on a disc

4 flavors: Composite (good), S-Video (better), Component and HDMI (best)

Sound formats; most TVs support both

Converts low res content into HD; next best thing to Blu-ray and much cheaper

# DTV Transition FAQ

What Will Happen on February 17, 2009?

All TV stations in the United States will turn off their analog signals that they have been broadcasting over the air since the beginning of television and start transmitting only digital signals. Anything that uses an analog tuner like an older TV, most portable TVs, multiband radios with TV bands, etc. will not receive TV programs using only an external antenna. However, reasonably-priced converter boxes will allow you to use many of the old analog devices.

## 1 Who will be affected?

If you have a product that won't receive a digital signal you may be able to use a converter box to make it work, otherwise it will have to be replaced. If you get your TV signals from cable or satellite you won't be affected.

## 2 What is a TV converter box?

A converter box takes digital signals in and outputs analog signals. You can hook up an antenna to the input on the converter box and your old TV to the output and you will be able to watch TV using the new digital signals.

## 3 Where can I buy a TV converter box?

You can buy a converter box online or at your local retailer like BestBuy or Radio Shack.

## 4 How much do they cost?

Converter boxes cost around \$59. The government is providing every household with up to two coupons worth \$40 each to be applied against the cost of a converter box.

## 5 What's the downside of a TV converter box?

The convert box runs through channel 3 or 4 on your TV set. That means you will need to change channels using the converter box remote and most likely, adjust volume on the TV set.

## 6 What else will I have to do?

Even if you buy and install a converter box, you may still not receive a TV signal because your old antenna may not be sensitive enough. You may have to buy a new indoor or outdoor antenna that is tuned to receiving the new signals.

## 7 Is it hard to hook up a TV converter box?

Most converter boxes come with everything you need to hook them up. Depending on your antenna type you may need an adaptor to attach the antenna.

## 8 How can I tell if my TV is analog or digital

If your TV says "ATSC" or "QAM" you should be good to go. If all you see on the TV or in the manual is "NTSC," then you'll need a converter box or new TV.

## 9 What if I have cable TV?

If you have cable TV coming into you set whether you have a set top box or not you should be in good shape and not require a converter box. However at some point in the future cable companies may decide to stop transmitting analog signals. At that time you may have no choice but to replace your TV.

## 10 What if I use a satellite dish?

Satellite TV users should not be affected. The satellite receiver box should continue to provide the analog signals that you current TV may require.

## 11 Why is the government doing this?

By eliminating analog signals the government is able to free-up some very desireable bandwidth that will be used for various purposes including emergency services and consumer wireless networking services.

## 12 If I decide to replace my old TV what's the best way to dispose of it?

Unfortunately most recycling centers charge a fee for disposing of old TVs and computer monitors. Expect to pay about \$5 – \$7 per device. [Mygreenelectronics.org](http://Mygreenelectronics.org) takes your zip code and lists recycling centers nearby.



# DTV Transition Resource Guide

## DTV Converter Box Resources



[Wikipedia Page on CECB](#) (Coupon Eligible Converter Box)



[Consumer Reports Converter Box Ratings](#) (subscription required) and [blog](#).



[Official Government Approved Converter Boxes](#)



A list of [green converter boxes](#)



CECB threads on [avsforum.com](#)



[Online retailer](#) specializing in DTV products



[Lots of good information from common questions to buying information](#)



The [National Association of Broadcasters](#) (NAB) put together this site with some overview information.



[DTV from a rural perspective](#)



[In case you need a new antenna](#)



Retrevo [HDTV Product Advisor](#)



[Retrevo Convert Box Info](#)

## Conclusion

We hope you now feel confident about surviving the DTV transition. If you decide to buy a new digital TV, here's how to use Retrevo to find the best values. Here's how to use Retrevo to find the best deals in HDTV. Retrevo analyzes all the most popular products and produces two important assessments:

- The overall Community Sentiment, which sums up user reviews into a single rating, saving you the reading of numerous reviews, trying to understand if reviewers like a product or not or if the product has experienced poor user satisfaction.
- The Value Rating, which aggregates all of the stores selling a given product and their respective prices, and informs users if a product is selling below, at part with or above its features and capabilities, helping consumers find good deals and get the best bang for their buck.



Retrevo also allows shoppers to review the information that was used to produce its assessments and recommendations. So if you wish to read specific expert or user reviews or just see which sites we're included, you can. You can also see a full list of stores selling the product and at what price for each store.

Another important check is to see the Retrevo Community Sentiment rating. If Retrevo says a product has a poor Community Sentiment then you might want to consider a different product.

To help you find some great TVs fast here are some quick picks for TVs:



**LCD TVs for under \$650**



**Best values in 1080p LCD TVs**



**Best values in Plasma TVs**